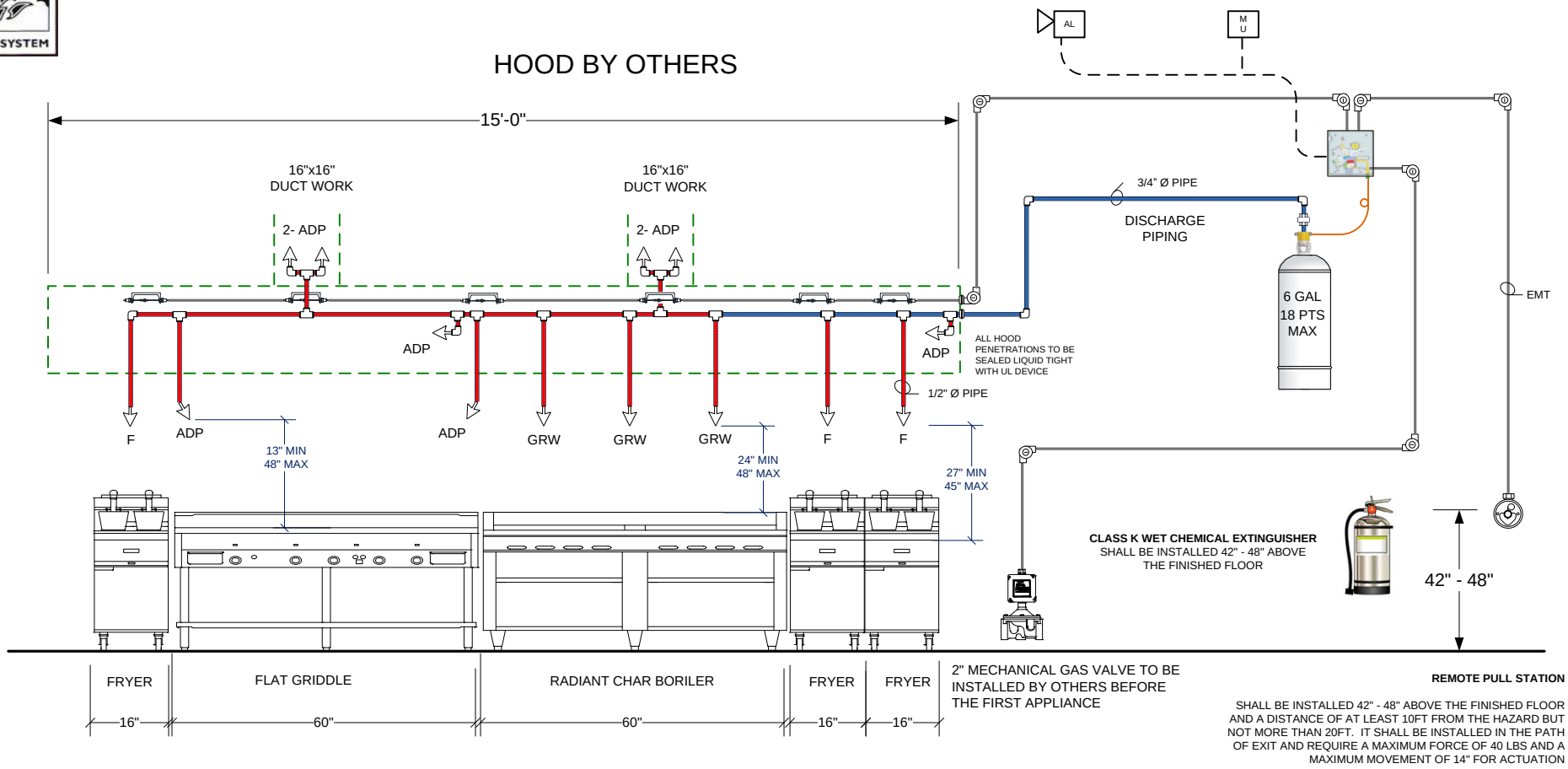
RANGE GUARD
WET CHEMICAL SYSTEM

PIPE SIZES
3/8" Ø PIPE
1/2" Ø PIPE
3/4" Ø PIPE

FUSIBLE LINKS: 360 DEG F

CONNECTION F.A.C.P. ACTIVATES UPON SYSTEM DISCHARGE (SUPPLIED & INSTALLED BY OTHERS – IF REQUIRED BY AHJ)

CONNECTION TO MAKE UP AIR FAN, SHUT DOWN UPON ACTIVATION (CONNECTION BY OTHERS)



REMOTE PULL STATION

SHALL BE INSTALLED 42" - 48" ABOVE THE FINISHED FLOOR AND A DISTANCE OF AT LEAST 10FT FROM THE HAZARD BUT NOT MORE THAN 20FT. IT SHALL BE INSTALLED IN THE PATH OF EXIT AND REQUIRE A MAXIMUM FORCE OF 40 LBS AND A MAXIMUM MOVEMENT OF 14" FOR ACTUATION

Tank #1 - 6 Gallon - 18 POINTS MAX				
Appliance	Noz Qty	Noz Type	Flow Pts	Total Pts
FRYER	3	F	2	6
CHAR BROILER	3	GRW	1	3
FLAT GRIDDLE	2	ADP	1	2
PLENUM	2	ADP	1	2
LARGE DUCT	4	ADP	1	4
			Total Flow Points	17

RANGE GUARD SYSTEM 6 GAL

PRE-ENGINEERED SYSTEM SHOP DRAWING ONLY

CITY OF BREMERTON

FIRE EQUIPMENT CONTRACTOR
345 6TH STREET, SUITE 600 BREMERTON, WA 98337
360-473-5290

SOME RESTAURANT
123 MAIN STREET
BREMERTON, WA 98337

SIZE	FSCM NO	DWG	REV
		KITCHEN FIRE SYSTEM	

SCALE N/A SHEET 1 OF 5

EXAMPLE DRAWINGS PROVIDED BY: http://www.firesystemdrawings.com

GENERAL NOTES:

1. System shall be Pre-Engineered

2. System shall be manufactured by BADGER FIRE PROTECTION

3. Kidde Fire systems have the following Listings and Approvals:

Underwriters Laboratories Inc, UL 300 - UL EX 3559

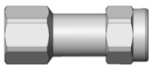
4. System Temperature Limitations – 32F min / 120F Max

5. Installation requirements, nozzle limitations and design criteria shall comply with the RANGE GUARD Technical Manual and all addendums as published by BADGER FIRE PROTECTION

6. Pipe and fittings shall be Schedule 40 Black, Chrome Plated or Stainless. Galvanized Pipe Shall Not Be Used.

7. All required electrical work shall be performed by others and is not included on this shop drawing.

8. All required plumbing work be performed by others and is not included on this shop drawing

Nozzle Type	Part Number	Flow Number	Grooves	
ADP Nozzle	B120011	1	1	
F Nozzle	B120012	2	2	
GRW Nozzle	B120013	1	3	
R Nozzle	B120014	1	4	
DM Nozzle	B120015	3	0	
LPF Nozzle	B120022	2	1 & 4	
LPR Nozzle	B120024	1	Disc & Core	

PIPING REQUIREMENTS

Range Guard systems do not require balanced piping to achieve proper distribution of wet chemical to all nozzles. Balanced piping is not necessary because a liquid has no difficulty in turning corners or changing directions. Range Guard nozzles come equipped with permanent predetermined orifices. This means that the liquid will be delivered in the exact quantities necessary to the duct, plenum and appliance hazards as required.

All pipe shall be schedule 40 (standard weight) black steel. Pipe may be chrome plated. Galvanized pipe shall not be used. All pipe and fittings must be made tight without pipe dope or thread sealant.

Pipe fittings shall be standard weight steel, cast iron, malleable iron or ductile iron. Galvanized fittings shall not be used. Branch line connection and individual nozzle connections may be made by using either the outlet or the run of a tee.

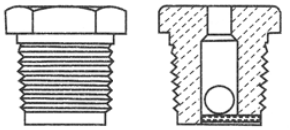
General Rules

- A maximum of 100 equivalent ft. (30.5 m) but not more than 40 linear ft. (12.2 m) of 1/4-in. pipe may be used from each branch line.
- The highest point of the system shall not exceed 12 ft. (3.7 m) above the cylinder outlet.
- The vertical rise of a branch line above the supply line shall not exceed a maximum of 4 ft. (1.2 m).
- Maximum discharge pipe volume limitations shall not be exceeded.
- Maximum equivalent length limitations shall not be exceeded.
- Maximum flow points for a given pipe shall not be exceeded.
- There are to be no low points or "traps" present in discharge piping.

Flow Number Range

Flow Number Range	Minimum Pipe Size
1 — 2	1/4-inch
1 — 8	3/8-inch
1 — 12	1/2-inch
13 — 24	3/4-inch
25 — 48	1-inch

Size	Piping Discharge Line Volume
1/4 in.	1.25 in.^{3} per linear foot — (67.2 cm^3 per linear meter)
3/8 in.	2.29 in.^{3} per linear foot — (123.1 cm^3 per linear meter)
1/2 in.	3.65 in.^{3} per linear foot— (196.2 cm^3 per linear meter)
3/4 in.	6.40 in.^{3} per linear foot — (344.1 cm^3 per linear meter)
1 in.	10.37 in.^{3} per linear foot — (557.5 cm^3 per linear meter)



1/2-INCH VENT PLUG, P/N 60-9196984-000

The 1/2-inch vent plug has a 1/2-inch (13 mm) NPT and can be installed in the outlet or the run of the tee in the discharge pipe. In all systems requiring multiple cylinder systems, only one vent plug is required. The vent plug must always point up or horizontally, never down, to assure that it will remain open during discharge.

Note: It is necessary to use a bushing with the vent plug when installing the vent plug in a tee larger than 1/2-inch (13 mm).

EXAMPLE DRAWINGS PROVIDED BY: http://www.firesystemdrawings.com

FIRE EQUIPMENT CONTRACTOR
345 6TH STREET, SUITE 600 BREMERTON, WA 98337
360-473-5290

SOME RESTAURANT
123 MAIN STREET
BREMERTON, WA 98337

SIZE	FSCM NO	DWG	REV
		KITCHEN FIRE SYSTEM	

SCALE N/A SHEET 2 OF 5

3-6.1.1.2 Ducts 50 to 100 inches in Perimeter

Two ADP nozzles, P/N B120011, pointing in the same direction are required for protection of ducts with perimeters greater than 50 inches and less than or equal to 100 inches. Ducts can be of unlimited length (refer to Figure 3-30).

For other option of ducts up to 75 perimeter inches (See Figure 3-32).

Note: All Range Guard systems are listed by UL and ULC for use with the exhaust fan either on or off when the system is discharged.

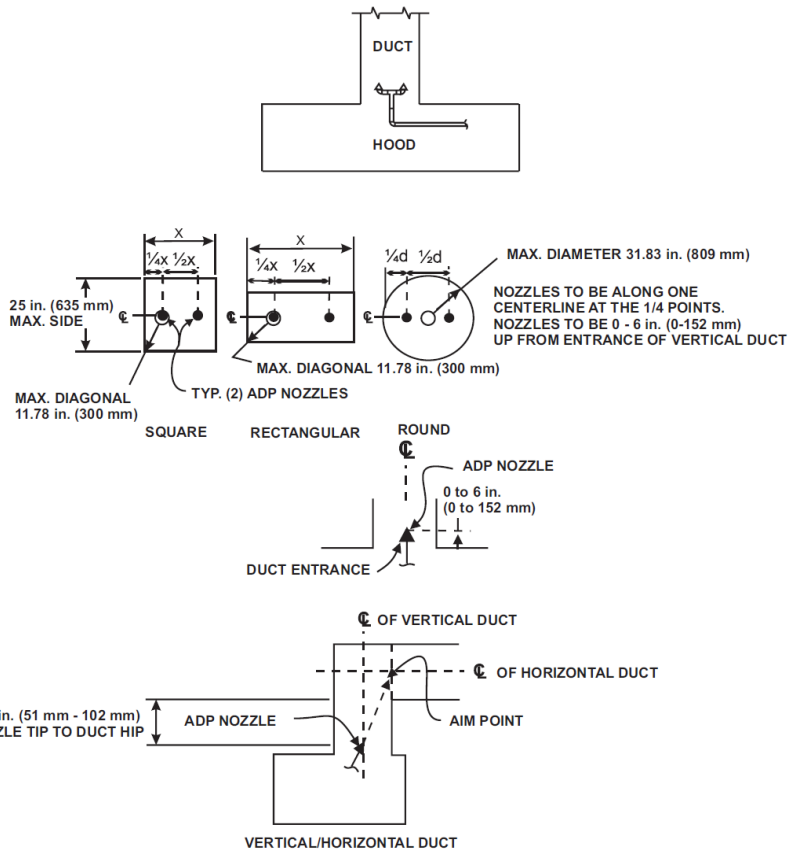


Figure 3-30. Duct Protection Using Two ADP Nozzles, P/N B120011

3-6.1 Plenums

Table 3-29. Plenum Protection

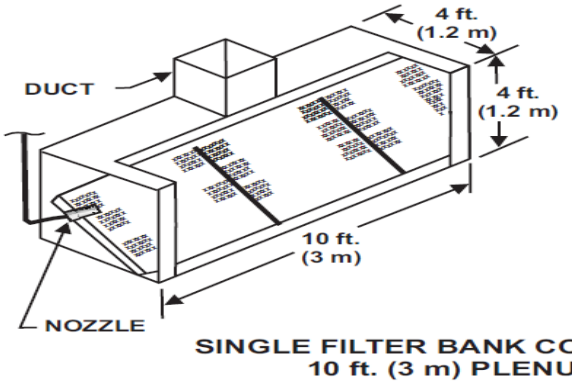
Items	Parameters	ADP Nozzle
No Filter [1]	10 ft. x 4 ft. (3 m x 1.2 m) Max.	1 - located at one end of the plenum
"V" Filter	10 ft. x 4 ft. (3 m x 1.2 m)	1 - located at one end of the plenum
	20 ft. x 4 ft. (6 m x 1.2 m)	2 - located at end of plenum pointing inwards
Single Bank Filter	10 ft. x 4 ft. (3 m x 1.2 m)	1 - located at one end of the plenum
	20 ft. x 4 ft. (6 m x 1.2 m)	2 - located at end of plenum pointing inwards

[1] When no filters are present, the nozzle protecting the plenum is used to discharge the wet chemical on the underside of the hood. In this case, the hood may not exceed a length of 10 ft. (3 m) or a width of 4 ft (1.2 m).

Longer plenums may be similarly protected with a single ADP nozzle being used for each 10 ft. (3.0 m) of plenum length and each 4 ft. (1.2 m) of plenum width.

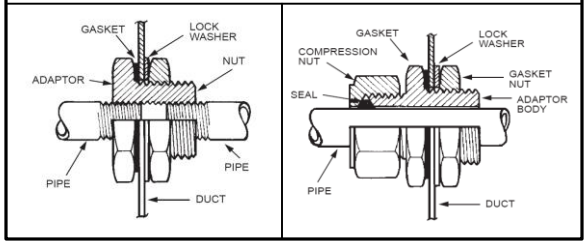
ADP nozzles may be used in combinations (see Figure 3-28). Multiples may be installed facing in the same direction, and/or at the ends of the plenum pointing in. Each nozzle shall provide a maximum of 10 ft. (3 m) of coverage.

ADP nozzles must be centrally located in the plenum with their discharge directed along the length of the plenum and located in relation to the filters as shown in Figure 3-28. Refer to Figure 3-28 for filter height.



SINGLE FILTER BANK COVERAGE
10 ft. (3 m) PLENUM

ALL PENETRATIONS TO THE HOOD SHALL BE SEALED WITH AN APPROVED QUICK SEAL DEVICE



EXAMPLE DRAWINGS PROVIDED BY: http://www.firesystemdrawings.com

FIRE EQUIPMENT CONTRACTOR
345 6TH STREET, SUITE 600 BREMERTON, WA 98337
360-473-5290

SOME RESTAURANT
123 MAIN STREET
BREMERTON, WA 98337

SIZE	FSCM NO	DWG	REV
		KITCHEN FIRE SYSTEM	

SCALE N/A SHEET 3 OF 5

3-4.1 Single Vat Deep Fat Fryer With Drip Boards

Table 3-2. F Nozzle Coverage Area

Items	Parameters
Maximum Hazard Area	18 in. x 18 in. (457 mm x 457 mm)
Maximum Appliance Area (with drip board)	18 in. x 23 in. (457 mm x 584 mm)
Nozzle Aim	Midpoint of hazard area
Nozzle Location (from top of appliance at an angle of 45° or more from the horizontal)	27 in. (686 mm) Min. 45 in. (1143 mm) Max.

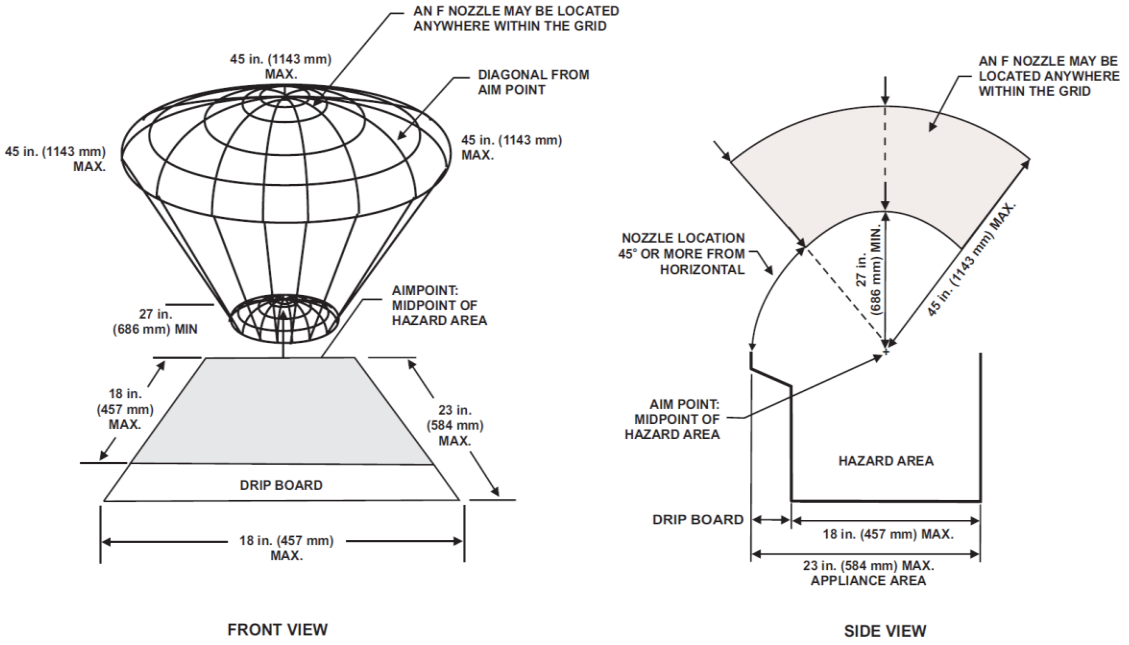


Figure 3-2. Single Vat Deep Fat Fryer

FIRE EQUIPMENT CONTRACTOR
345 6TH STREET, SUITE 600 BREMERTON, WA 98337
360-473-5290

SOME RESTAURANT
123 MAIN STREET
BREMERTON, WA 98337

SIZE	FSCM NO	DWG	REV
		KITCHEN FIRE SYSTEM	

SCALE N/A SHEET 4 OF 5

EXAMPLE DRAWINGS PROVIDED BY: http://www.firesystemdrawings.com

3-4.15 Gas Radiant/Electric Charbroiler

Table 3-21. GRW Nozzle Coverage Area

Items	Parameters
Maximum Cooking Surface	21 in. x 24 in. (533 mm to 610 mm)
Nozzle Aim	Midpoint of the hazard area above cooking surface
Nozzle Location (located at an angle of 45° or more from the horizontal)	24 in. (610 mm) Min. 48 in. (1219 mm) Max.

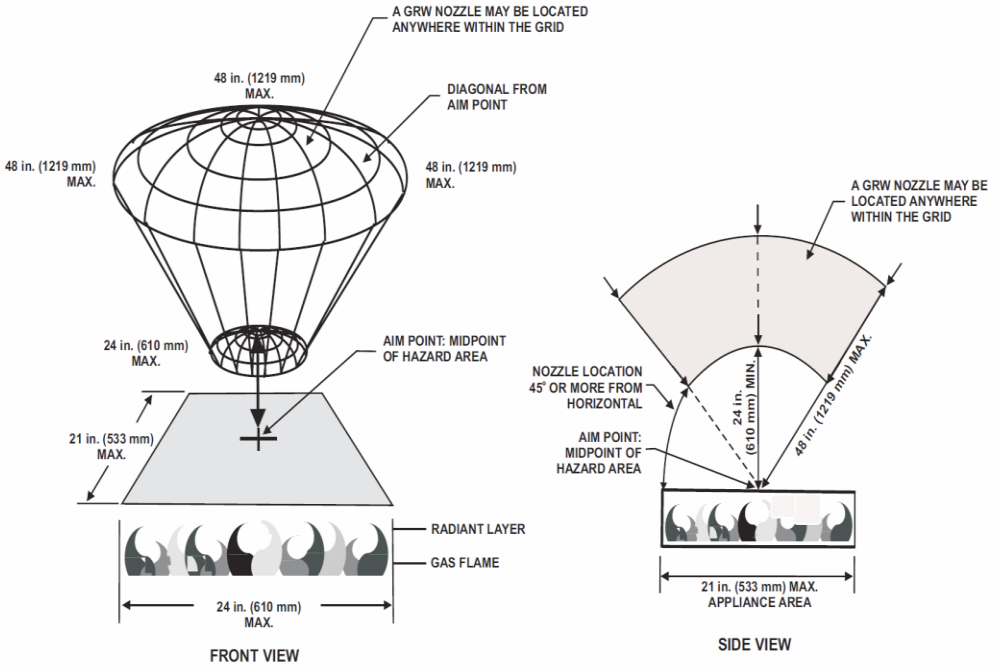


Figure 3-17. Gas Radiant/Electric Charbroiler

3-4.20 Griddle — Flat Cooking Surface (With or without Raised Ribs)

Table 3-26. ADP Nozzle Coverage Area

Items	Parameters
Maximum Hazard Area	30 in. x 42 in. (762 mm x 1067 mm)
Nozzle Aim	At a point 3 in. (76 mm) from the midpoint of hazard area
Nozzle Location — **any point on the perimeter of appliance**	13 in. (330 mm) Min. 48 in. (1219 mm) Max. **Note:** Positioning the nozzle directly over the appliance is not permitted.

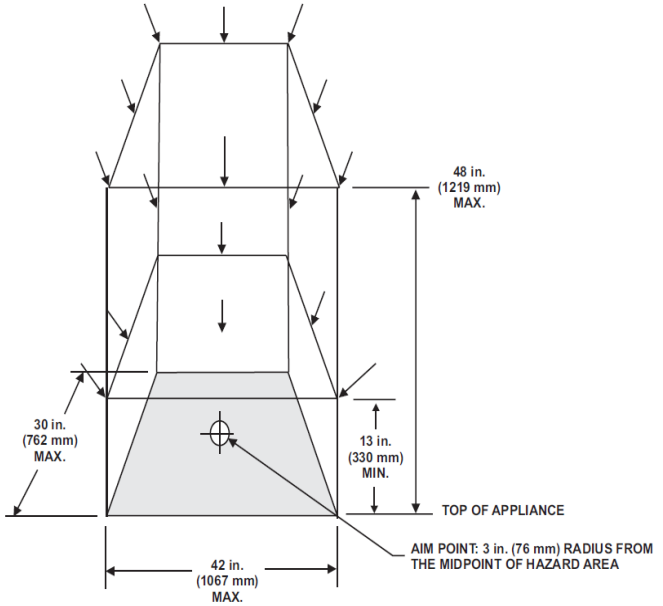


Figure 3-22. Griddle - Flat Cooking Surface

FIRE EQUIPMENT CONTRACTOR
345 6TH STREET, SUITE 600 BREMERTON, WA 98337
360-473-5290

SOME RESTAURANT
123 MAIN STREET
BREMERTON, WA 98337

SIZE	FSCM NO	DWG	REV
		KITCHEN FIRE SYSTEM	

SCALE N/A SHEET 5 OF 5

EXAMPLE DRAWINGS PROVIDED BY: http://www.firesystemdrawings.com